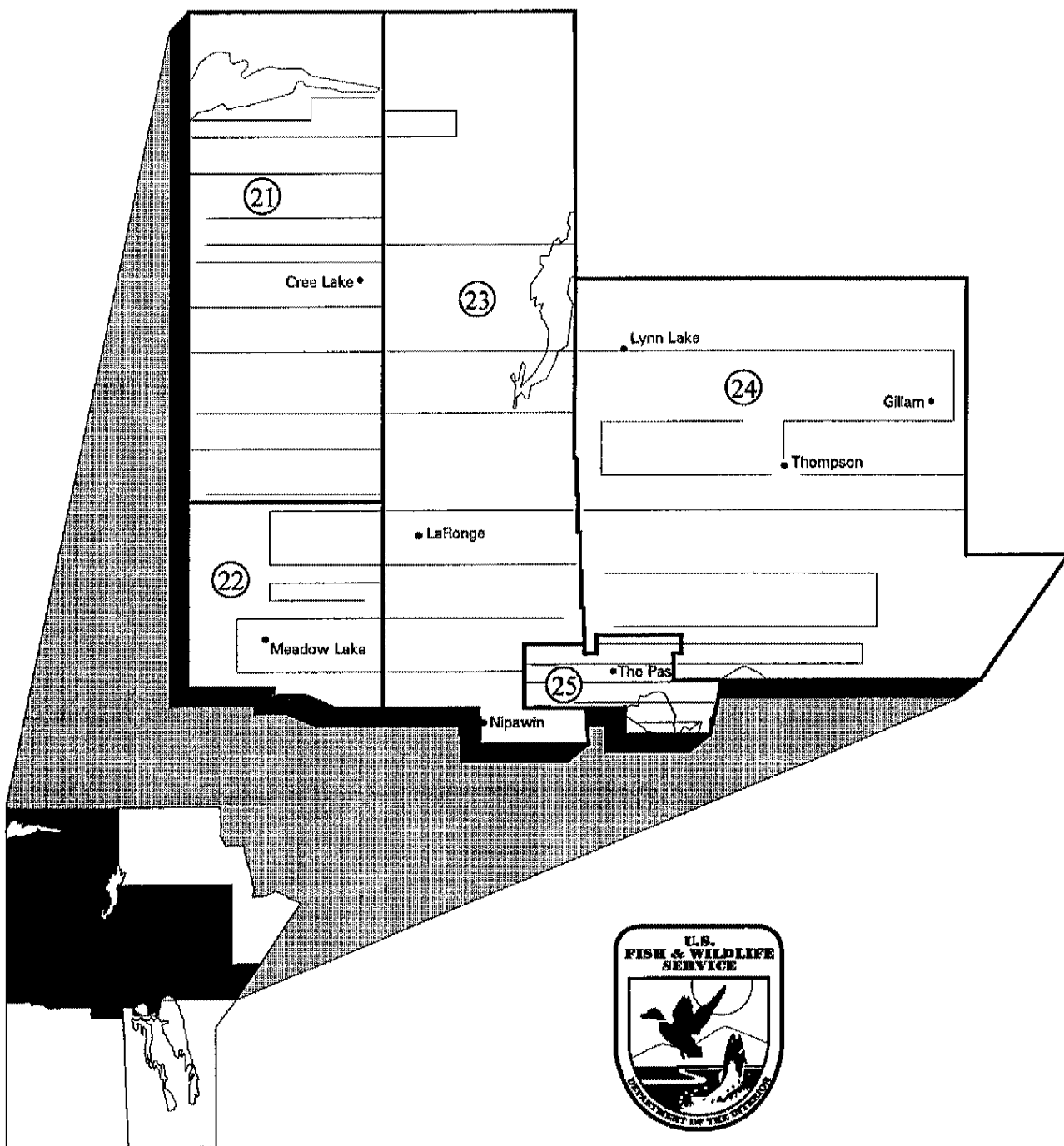


NORTHERN MANITOBA, NORTHERN SASKATCHEWAN, AND THE SASKATCHEWAN RIVER DELTA

WATERFOWL PRODUCTION SURVEY

D -

1998



The data presented in this report are preliminary and subject to further editing. Final estimates will be available from the U.S. Fish and Wildlife Service, Office of Migratory Bird Management, Laurel, Maryland 20708

TITLE: Waterfowl Production Survey

STRATA SURVEYED: Northern Manitoba, Northern Saskatchewan
and the Saskatchewan River Delta
(Strata 21, 22, 23, 24, and 25)

DATES: July 9-20, 1998

DATA SUPPLIED BY: U. S. Fish & Wildlife Service

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ABSTRACT: The brood index of 117,300 was above (3%) the value for 1997, above (40%) the 10-year mean and above (11%) the long-term mean. Late nesting indices were below the long term mean for dabblers (-82%), and below for divers (-74%) and total ducks (-76%).

METHODS: Survey techniques were standard and comparable with those of previous years. The procedures followed in conducting the survey are contained in the Standard Operating Procedures for Aerial Waterfowl Breeding Ground Population and Habitat Surveys, Section III, April, 1987. The survey began July 9 and was terminated July 20.

WEATHER AND HABITAT CONDITIONS: Although over winter and early spring precipitation was generally below normal throughout northern Saskatchewan and Manitoba, wetter than normal conditions occurred during June and early July in portions of the survey unit. This occurred in Strata 22 (Meadow Lake area) and most of northern Manitoba. However a good portion of northern Saskatchewan,

especially the LaRonge and Buffalo Narrows areas, received below normal precipitation during the brood rearing season. Forest fires were prevalent during the survey west of LaRonge and south of Buffalo Narrows. Early July was exceedingly hot with numerous thunderstorms. These conditions (lightning strikes) were favorable for forest fires. The number of forest fires in northern Saskatchewan exceeded the 10-year average for the season by July 14. The fire threat was less in northern Manitoba. However, the number of fires for the 1998 season will be above normal. Beavers tend to stabilize water levels along the smaller streams. Unlike in 1997, flooding was nonexistent along the major rivers and lake shorelines. The entire area rated good to excellent for waterfowl production in 1998.

PRODUCTION INDICES: Table 1 presents the long term trend in waterfowl brood and late-nesting indices. Table 2 presents the status of waterfowl brood and late nesting indices by stratum and compares totals to 1997, the 10-year mean and long term mean.

CONCLUSION: The 1998 duck brood index was above (40%) the 10 year mean and the (11%) the long term mean. The 1998 late nesting index for total ducks was well below (-76%) the long term mean. Apparently many birds were successful in their first nesting attempt. The 1998 spring and subsequent break-up was one of the earliest on record. A very low late nesting index was anticipated. In spite of below normal precipitation during late spring and early summer in some areas, waterfowl habitat appeared good to excellent throughout the survey unit. This was especially true along the small streams, small lakes, and beaver ponds; the real fabric of "bush" habitat.

Table 1. Long-term trend in waterfowl brood and late-nesting indices by species in N. Saskatchewan, N. Manitoba and the Saskatchewan River Delta, 1959-1998 (index in thousands)*

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Broods:														
Duck brood index	81.3	60.3		53.6	66.0	141.8	49.3	162.7	169.9	246.2	299.0	169.5	155.4	112.4
Avg. brood size **	4.7	5.2		5.0	4.9	5.3	5.3	5.5	5.2	5.8	5.2	5.7	5.6	5.3
Coot brood index	6.4	3.9	N	5.5	2.1	8.5	5.6	1.1	8.7	24.1	8.8	12.4	16.4	9.4
Late-nesting index***														
Dabblers:														
			O											
Mallard	24.4	11.7		29.0	28.1	27.8	22.1	0.6	27.4	25.2	37.5	39.6	29.2	16.2
Black duck	0.0	0.0		0.1	1.9	0.6	0.8	0.1	2.1	0.0	2.5	0.0	0.0	0.0
Gadwall	0.0	2.2		0.7	1.3	3.5	1.2	0.8	1.3	0.9	4.6	2.5	1.2	2.1
Wigeon	0.3	3.7		2.6	6.6	7.8	4.6	0.9	1.8	0.8	9.8	8.9	16.9	5.1
Green-winged teal	0.0	0.0		1.0	2.9	1.9	0.8	0.2	3.2	0.1	5.6	2.7	5.8	3.4
Blue-winged teal	0.0	0.2	S	1.6	1.6	2.6	2.1	0.2	0.5	1.0	5.6	6.5	1.8	1.8
Northern shoveler	0.0	0.0		2.2	0.5	0.2	1.2	0.4	1.0	0.7	6.0	0.4	0.7	0.6
Pintail	1.7	3.0		1.8	2.3	2.6	1.8	3.2	4.6	1.6	19.6	1.7	0.9	0.4
Subtotal	26.4	20.8	U	39.0	45.2	47.0	34.6	3.2	42.1	30.3	91.2	62.3	56.5	29.6
Divers:														
			R											
Redhead	0.3	0.0		1.9	2.4	4.6	2.1	0.1	1.2	0.9	0.4	0.7	2.0	0.6
Canvasback	0.6	3.4		8.0	1.6	0.8	2.2	0.1	1.0	0.2	0.9	0.5	0.2	0.0
Scaup	11.2	2.6	V	22.5	24.7	28.4	17.5	2.3	21.3	16.3	48.5	19.3	10.8	14.1
Ring-necked duck	0.0	0.8		6.4	8.7	10.5	19.8	0.8	7.1	4.6	24.4	17.5	14.3	8.5
Goldeneye	2.2	2.7		3.8	0.5	2.3	0.1	0.2	0.9	0.1	4.1	3.0	3.5	1.6
Bufflehead	0.9	0.9	E	2.5	2.5	1.4	2.4	1.3	4.3	2.4	12.4	11.9	3.5	9.5
Rudy duck	0.0	0.0		0.8	1.3	1.2	1.4	0.0	0.1	0.0	0.0	1.3	0.9	0.6
Subtotal	15.2	10.4	Y	45.9	41.7	49.2	45.5	4.8	35.9	24.5	90.7	54.2	35.2	34.9
Miscellaneous														
Oldsquaw	0.0	0.0		0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	0.0	0.5		1.7	0.5	0.0	0.0	5.7	0.0	1.4	18.2	0.0	0.8	2.5
Merganser	6.8	15.2		9.0	9.5	10.3	10.7	2.5	4.0	4.8	10.6	9.5	9.8	7.2
Unidentified	28.0	45.7		23.3	27.3	8.6	0.7	28.9	0.0	0.0	1.9	2.4	1.4	0.0
Subtotal	34.8	61.4		34.0	37.3	18.9	11.4	42.6	4.0	6.2	28.7	11.9	12.0	9.7
Total	76.4	92.6		118.9	124.2	115.1	91.5	50.6	82.0	61.0	210.6	128.4	103.7	74.2

* Unadjusted for visibility bias.

** From complete Class II and III brood observed.

*** As indicated by observed adult pairs and singles.

Table 1. Long-term trend in waterfowl brood and late-nesting indices by species in N. Saskatchewan, N. Manitoba and the Saskatchewan River Delta, 1959-1998 (Index in thousands)*

Species	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Broods:															
Duck brood index	86.3	100.6	100.7	110.1	132.2	100.8	95.4	122.3	136.2	73.5	78.1	67.0	37.5	64.6	111.3
Avg. brood size**	5.5	6.2	6.0	5.5	5.4	5.3	4.0	4.6	4.8	5.1	5.2	4.8	5.1	5.0	5.3
Coot brood index	13.7	6.5	6.4	9.6	19.5	8.4	4.0	23.0	29.6	14.6	1.7	2.3	2.2	6.2	13.5
Late-nesting Index***															
Dabblers:															
Mallard	21.6	17.7	22.2	29.0	33.8	36.0	50.5	14.5	31.8	23.8	25.1	10.6	8.3	16.4	16.6
Black duck	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	1.7	1.7	0.8	1.2	1.7	0.7	2.0	1.0	2.9	1.1	1.2	0.5	0.0	0.0	0.7
Wigeon	3.4	3.8	3.8	8.4	7.7	6.4	3.6	4.5	9.0	4.9	13.0	3.5	3.5	6.6	7.6
Green-winged teal	3.2	7.5	2.0	3.2	6.1	16.7	10.5	2.0	2.8	3.2	8.0	1.8	4.2	7.2	6.9
Blue-winged teal	0.3	1.3	0.4	1.5	3.6	0.9	0.9	0.8	3.9	1.0	1.7	0.6	0.0	3.8	0.8
Northern shoveler	1.0	0.3	2.7	1.0	0.9	0.4	0.1	0.0	0.1	0.1	0.2	0.2	0.5	0.4	0.5
Pintail	0.0	1.4	0.6	5.6	1.6	0.4	0.3	0.0	0.5	0.4	0.7	0.0	0.0	0.8	0.6
Subtotal	31.2	33.5	32.6	51.0	55.4	61.5	67.9	22.8	51.5	34.5	49.9	17.2	16.5	35.2	33.7
Divers:															
Redhead	1.6	0.0	1.4	1.3	0.2	0.2	0.1	0.1	0.5	0.7	0.2	0.0	0.8	0.4	0.1
Canvasback	0.3	0.0	0.7	1.9	0.7	0.7	0.0	0.2	0.1	0.0	0.2	0.0	0.0	0.2	0.5
Scaup	11.9	13.7	18.5	13.8	18.0	11.4	15.0	1.2	12.5	14.9	22.0	11.6	6.4	7.8	8.6
Ring-necked duck	7.9	6.0	14.8	12.7	15.5	6.2	14.3	7.7	16.8	15.4	19.3	12.6	13.6	9.1	13.6
Goldeneye	0.0	4.2	1.7	2.4	3.2	0.9	1.5	1.9	0.8	2.2	1.4	1.7	1.5	0.8	1.8
Bufflehead	1.8	9.1	6.1	4.4	10.2	4.8	6.3	4.2	5.2	3.3	11.4	3.3	4.3	3.9	8.2
Ruddy duck	1.2	0.3	0.0	1.2	0.7	0.4	2.1	0.4	2.5	0.6	0.1	0.0	0.0	1.2	0.2
Subtotal	24.7	33.3	43.2	37.7	48.5	26.6	39.3	15.7	38.4	37.1	54.6	29.2	26.6	23.2	33.2
Miscellaneous															
Oidsquaw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Scoters	0.1	2.7	0.8	0.0	3.5	0.0	1.5	0.7	0.7	1.1	1.1	1.7	0.5	1.5	0.0
Mergansers	1.1	5.5	16.2	7.4	9.2	9.6	11.7	2.2	12.4	6.7	14.4	12.3	7.9	12.4	11.9
Unidentified	0.0	1.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Subtotal	1.2	9.7	19.3	7.4	12.7	9.6	13.2	2.9	13.1	8.1	15.5	14.0	8.4	14.3	11.9
Total	57.1	76.5	95.1	86.1	116.6	97.7	120.4	41.4	103.0	79.7	120.0	60.4	51.5	72.7	76.8

* Unadjusted for visibility bias.

** From complete Class II and III brood observed.

*** As indicated by observed adult pairs and singles.

Table 1. Long-term trend in waterfowl brood and late-nesting indices by species in N. Saskatchewan, N. Manitoba and the Saskatchewan River Delta, 1959-1998 (index in thousands)*

Species	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Broods:											
Duck brood index	100.0	56.1	37.8	82.8	83.1	63.4	62.8	143.7	92.0	113.6	117.3
Avg. brood size**	4.4	4.2	4.6	6.1	4.8	4.2	4.8	6.0	32.2	5.7	5.3
Coot brood index	10.4	10.6	7.0	5.5	1.7	2.7	0.5	4.2	2.9	2.2	7.9
Late-nesting Index***											
Dabblers:											
Mallard	13.5	11.7	18.0	19.7	24.4	12.5	22.0	10.0	23.5	11.5	2.1
Black duck	0.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	1.4	1.5	0.7	2.1	1.7	1.3	1.9	0.3	1.1	0.1	0.1
Wigeon	5.2	3.4	9.5	7.0	4.7	3.4	5.5	3.1	7.0	3.8	3.5
Green-winged teal	5.7	6.5	7.4	8.0	6.6	2.1	1.5	2.7	6.5	3.8	0.9
Blue-winged teal	1.8	2.7	2.0	5.1	3.8	2.6	0.5	0.9	1.0	0.9	0.2
Northern shoveler	0.9	0.1	0.1	0.2	0.7	0.2	1.8	0.2	0.2	0.3	0.0
Pintail	0.5	0.2	0.1	0.0	0.1	0.0	0.2	0.3	0.5	0.0	0.2
Subtotal	29.1	26.1	37.8	42.1	42.7	22.1	33.4	17.5	39.8	19.3	7.0
Divers:											
Redhead	0.9	0.1	0.2	0.1	0.0	0.4	0.8	0.0	0.0	0.1	0.1
Canvasback	0.0	0.1	0.5	0.0	0.7	0.0	0.0	0.2	0.9	0.0	0.0
Scaup	9.5	6.3	8.0	3.1	9.1	6.7	5.8	5.7	13.7	4.9	1.9
Ring-necked duck	8.3	7.0	9.7	10.6	17.0	11.8	11.0	7.1	7.4	4.5	3.4
Goldeneyes	1.3	0.4	1.4	0.2	0.5	0.8	0.8	3.8	2.6	2.4	0.0
Bufflehead	6.5	3.6	4.7	1.0	18.0	7.5	4.0	3.5	4.3	3.1	3.1
Ruddy duck	1.5	0.7	0.7	0.1	0.0	0.5	0.3	1.3	0.2	0.4	0.0
Subtotal	28.0	18.2	25.2	15.1	45.3	27.7	22.7	21.6	29.1	15.4	8.5
Miscellaneous											
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	0.5	0.0	0.0	0.0	0.8	0.6	1.3	0.0	1.1	1.2	0.8
Mergansers	7.8	5.2	10.2	6.1	10.4	7.0	19.4	4.0	10.0	6.5	4.1
Unidentified	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	8.7	5.2	10.2	6.1	11.2	7.6	20.7	4.0	11.1	9.7	4.9
Total	65.8	49.5	73.2	83.3	99.2	57.4	76.8	43.1	80.0	44.4	20.4

* Unadjusted for visibility bias.

** From complete Class II and III brood observed.

*** As indicated by observed adult pairs and singles.

Table 2. Status of waterfowl brood and late-nesting indices by stratum in N. Saskatchewan, N. Manitoba and the Saskatchewan River Delta, comparing 1998 with 1997, the 1988-1997 previous 10-year mean, and the 1959-1997 long-term mean. (Index in thousands).*

Species	Stratum					1998 Total	1997 Total	10-Year Mean	Long-Term Mean	Percent change from		
	21	22	23	24	25					1997	10-Year Mean	Long-Term Mean
Duck brood index	12.3	24.0	27.4	48.2	5.4	117.3	113.5	83.5	105.6	3%	40%	11%
Avg. brood size**	5.8	5.8	4.6	5.1	5.2	5.3	5.7	7.7	5.9	-7%	-31%	-10%
Coot brood index	0.3	3.3	0.0	0.8	3.5	7.9	2.2	4.8	8.6	259%	66%	-9%
Late-nesting index***												
Dabblers:												
Mallard	0.3	0.0	0.0	1.6	0.2	2.1	11.5	16.7	22.5	-82%	-87%	-91%
Black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0%	-100%	-100%
Gadwall	0.0	0.0	0.0	0.0	0.1	0.1	0.1	1.2	1.4	0%	-92%	-93%
Wigeon	0.3	0.7	0.0	2.4	0.1	3.5	3.8	5.3	5.6	-8%	-33%	-38%
Green-winged teal	0.0	0.3	0.0	0.4	0.2	0.9	3.8	5.1	4.3	-75%	-82%	-79%
Blue-winged teal	0.0	0.0	0.0	0.0	0.2	0.2	0.0	2.0	1.8	100%	-90%	-89%
Northern shoveler	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	-100%	-100%	-100%
Pintail	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.2	1.6	100%	5%	-88%
Subtotal	0.6	1.0	0.0	4.4	1.0	7.0	19.3	31.0	38.2	-64%	-77%	-82%
Divers:												
Redhead	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.7	0%	-82%	-86%
Canvasback	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0%	-100%	-100%
Scaup	0.0	0.3	0.0	1.6	0.0	1.9	4.9	7.3	13.2	-61%	-74%	-86%
Ring-necked duck	0.0	0.3	0.7	2.4	0.0	3.4	4.5	9.4	10.7	-24%	-64%	-68%
Goldeneye	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.4	1.7	-100%	-100%	-100%
Bufflehead	0.0	0.7	0.0	2.4	0.0	3.1	3.1	5.6	5.2	0%	-45%	-41%
Ruddy duck	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.6	-100%	-100%	-100%
Subtotal	0.0	1.3	0.7	6.4	0.1	8.5	15.4	24.8	32.8	-45%	-66%	-74%
Miscellaneous												
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0%	N/C	-100%
Scoters	0.0	0.0	0.0	0.8	0.0	0.8	1.2	0.6	1.3	0%	45%	-40%
Mergansers	0.3	0.7	0.7	2.4	0.0	4.1	8.5	8.9	8.9	-52%	-54%	-54%
Unidentified Ducks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0%	-100%	-100%
Subtotal	0.3	0.7	0.7	3.2	0.0	4.9	9.7	9.5	15.0	-49%	-48%	-67%
Total	0.9	3.0	1.4	14.0	1.1	20.4	44.4	65.3	85.5	-54%	-69%	-76%

* Unadjusted for visibility bias.

** From complete Class II and III broods observed

*** As indicated by adult pairs and singles.

Table 3. Northern Saskatchewan, Northern Manitoba and Saskatchewan River Delta-Stratum data sheet, July 1998.

SURVEY DESIGN	Stratum					TOTAL
	21	22	23	24	25	
Square miles in the stratum	44,922	20,278	68,320	83,794	6,816	224,130
Square miles in sample	209.25	83.25	150.75	256.50	67.50	767.25
Linear miles in the sample	1,674	666	1,206	2,052	540	6,138
Number of transects in sample	11	6	9	8	5	39
Number of segments in sample	93	37	67	114	30	341
Expansion Factor	214.424	243.580	454.200	116.512	100.978	

CURRENT YEAR COVERAGE	Stratum					TOTAL
	21	22	23	24	25	
Square miles in sample	153.00	60.75	92.25	207.00	67.50	580.50
Linear miles in the sample	1224	486	738	1656	540	4644
Number of transects in sample	8	4	6	7	5	30
Number of segments in sample	68	27	41	92	30	258
Expansion Factor	293.608	333.794	740.596	404.802	100.978	